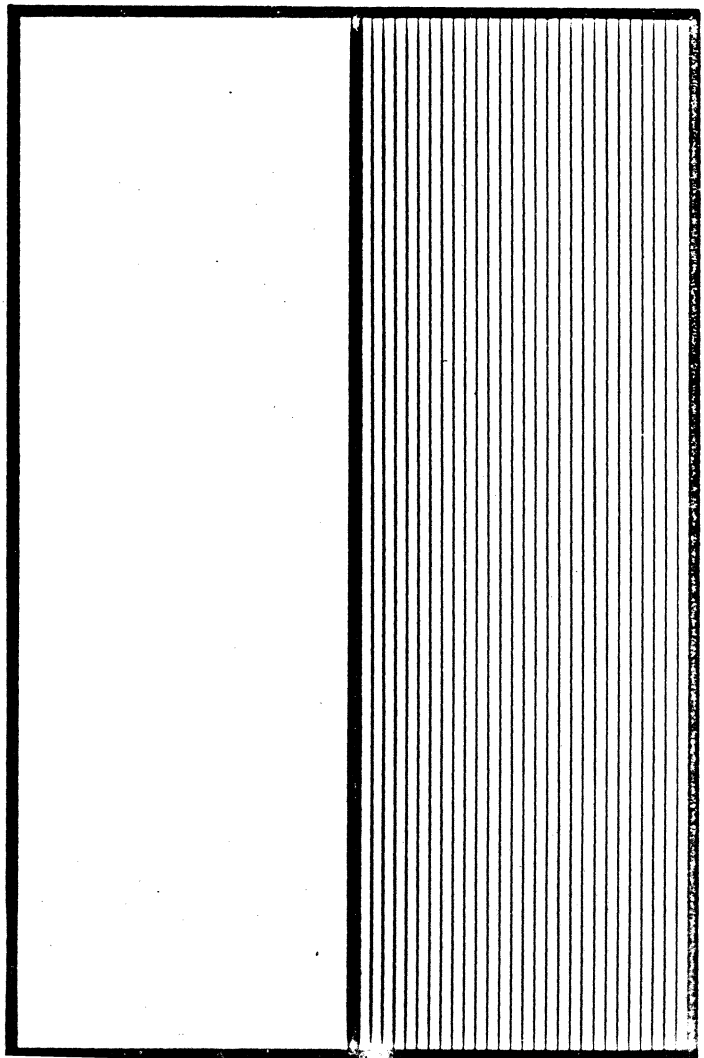
SPERRY RAND

4091718

UNIVAC 9400 SYSTEM

PROGRAM DESCRIPTION DRAWING



CUSTOMER ENGINEERING

SPERRY RAND UNIVAC

DRAWING NO. 4091718

REVISION -

CUSTOMER ENGINEERING
PRODUCT DIAGNOSTIC SOFTWARE

9400 - 5024/8424 or 8425 Disc Timing Test D2160

	SIGNATURE	TITLE	DATE
APPROVAL			
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REVISION STATISTICS RECORD

4091718

DWG REV	MSTR REV	RELEASE DATE	DESIGNER NAME	EIR NUMBER	FCO NUMBER
-	N		PDS Phila., Pa.	C12607	

REVISION DESCRIPTION RECORD

REV	DESCRIPTION
-	Release to 9400 Test Library

4091718

TABLE OF CONTENTS

SECTION			PAGE
1.0	INTRODUCTION		5
	1.1	Purpose	5
	1.2	Major Objectives	5
	1.3	Equipment Configurations	5
	1.4	Associated Software	5
	1.5	Reference Documents	5
	1.6	Restrictions	5
2.0	FUNCTIONAL DESCRIPTION		6
	2.1	General Organization	6
	2.2	Subtest Descriptions	6
		2.2.1 Subtest 1	6
		2.2.2 Subtest 2	6
		2.2.3 Subtest 3	6
3.0	OPERATING PROCEDURES		7
	3.1	Initialization	7
	3.2	Test Program Parameters	7
	3.3	Test Program Messages	7
4.0	SUPPLEMENTARY DATA		8
	4.1	Supplementary Software Information	8
	4.2	Supplementary Hardware Information	8

1. INTRODUCTION

1.1 Purpose. This document describes a 9400 Maintenance test program for the 5024/8424 of 25 Subsystem.

1.2 Major Objectives. The objective of this test program is to perform a test of the 5024/8424 or 25 Subsystem. Test organization and operator options are intended to satisfy the needs of Design, Quality Control and Field Engineering personnel in checkout, acceptance and maintenance activities.

1.3 Equipment Configurations. All equipment configurations must be connected to a Selector I-O channel of the 9400 Processor. This test will operate the following equipment configuration:

- Disc File Control - Type 5024
- Disc Drive - Type 8424 or 25
- Disc Pack Assembly - Type F12 14-01

1.4 Associated Software. This program has DSKH included as an integral part of the program. This is the standard disc handler routine used by all Disc Maintenance test programs. It is the interface between the program and MCR, which performs program load, parameterization, execution, deletion, I-O handling, and message handling.

1.5 Reference Documents

DRAWING	DESCRIPTION
S70040	UNIVAC 9400 Processor, Type 3019-00 and -01.
—	UNIVAC 9400 Dual I-O Selector Channel, Type XXXX-00 and -01.
P10076	Disc File Control, Type 5024. 8424 or 25
4091622	Maintenance Control Routine.
4091623	Parameter and Message Routines.
4091670	5024/8414 Disc Program Handler.

2. FUNCTIONAL DESCRIPTION

2.1 General Organization - This program tests the time it takes for a disc to make one complete revolution, and both forward and backward Seek time between cylinder 0 and each other cylinder from 1 to 405. The rotation time is calculated ten times and then printed. The Seek times are calculated for forward then backward for each cylinder, and then plotted on a graph on the on-line printer.

2.2 Subtest Descriptions - Each of the following subtests is described by stating its objective and the method used to attain it.

2.2.1 Subtest 1 - (Group Test)

Objective - This subtest enables the operator to internally select several tests simply by entering Test 1. Test 1 selects Tests 2 and 3.

Method - The program places bits 2 and 3 into the parameter location which tells DSKH which tests to enter.

2.2.2 Subtest 2 - (Rotation Timing)

Objective - This subtest measures the time required for the disc to make one complete revolution.

Method - Two consecutive Read Record 0 Commands are issued. As soon as the first byte of data comes into memory, a timing loop is entered. While counting, the second area is watched until the first byte gets overlaid. This is repeated ten times. The data is edited and printed.

2.2.3 Subtest 3 - (Seek Test)

Objective - This subtest measures and plots a graph of the time required for the read head to move from cylinder 0 to each consecutive cylinder, and from each consecutive cylinder back to cylinder 0.

Method - As each Seek Command is issued, an interrupt is expected with Channel End status set. A timing loop is then entered until a second interrupt occurs with Device End status set. The time for each reading is retained in memeory luntil all readings have been obtained. The data is then edited and printed in graphic form.

2.2.4 Subtest 4 - (Random Access Timing Test)

Objective - This subtest performs a random access timing operation to a maximum of 9999 seeks.

Method - The V17 parameter is used to select the desired number of seeks to perform. The preset value of V17 is V17/2000000 where 2000 is the number of decimal seeks to perform. The test randomly executes seek commands, reads HA to insure a correct seek, then compiles and prints average seek timing information. At the initial entry of the test, a recalibrate command is performed to position the seek mechanism to cylinder 0, head 0. The random address generator is then entered and the next seek will be issued to the disc address returned from the generator. A read home address is performed to insure a correct seek. The actual seek time is determined by calculating the time between channel end interrupt and the device end interrupt. This process is continued until the seek limit specified in the options is reached. The average seek time is then printed. A cylinder seek frequency table will be printed if selected through the options.

3. OPERATING PROCEDURES - The Disc Handler Routine (DSKH) functions as a standard interface between the Disc Test Programs and MCR. Standard operating procedures for the disc test programs are described in the DSKH document, Drawing Number 4091718

3.1 Initialization - The procedures used by this program are common to most other Disc MAR's and are described in the DSKH document. The Load Name for this program is D2160

3.2 Test Program Parameters - Standard parameter information applicable to this MAR is described in the DSKH document.

3.3 Test Program Messages - All test entry and exit messages and a standard I/O error message are described in the DSKH document (Drawing Number 4091670). However, this MAR has specific messages which apply when running in the Timing Mode or which apply to a particular subtest as described below.

- Timing Mode

  SIO NOT ACCEPTED 9C0C00XX
  CSW XXXXXXXXXXXXXXXX CAW XXXXXXXX

  ERROR ON SEEK XX FROM XX
  CSW XXXXXXXXXXXXXXXX CAW XXXXXXXX

- Subtest 2

  DA XXXX ROTATION TIME IN MILLISECONDS XX.XX XX.XX ... XX.XX

- Subtest 3

  Prints a graph which can be seen by operating the program. The characters used for plotting are as follows:

  F Forward time
  B Backward time
  $ Both times
  U Forward underflow (column 21)
  V Backward underflow (column 21)
  W Both underflow (column 21)
  O Forward overflow (column 137)
  P Backward overflow (column 137)
  Q Both overflow (column 137)

4. SUPPLEMENTARY DATA

4.1 Supplementary Software Information - Each test of this MAR is covered separately by DSKII and stands alone. It can be extracted from the rest of the MAR and either be eliminated or assembled by itself with DSKII.

For further information see Section 4 of the DSKII document, Drawing Number 4091702 and other documents listed in Paragraph 1.5 of this document.

4.2 Supplementary Hardware Information - For additional hardware information consult Section 4 of the DSKII document and the appropriate documents listed in Paragraph 1.5 of this document.

4.2.1 Graph Underflow and Overflow Limits - For proper operation the following limits are provided.

Lower Limit - When forward and/or backward seek times are below 20.0 msec.

Upper Limit - When forward and/or backward seek times are over 137.0 msec.